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Keywords

Academic performance, International students, Graduate study

Disciplines

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Peer-Reviewed Articles

International Graduate Students' Academic Performance: What Are the Influencing Factors?

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Abstract

International graduate students have been a sizeable segment of the student body in the U.S. higher educational system. However, this student population has not completely been understood by higher education administrators and faculty and their diverse needs have not been met by existing services on campuses. This study examined factors associated with the students' academic performance in the United States. The findings indicated that factors associated with masters and doctoral students' academic performances were greatly different. This study suggests policies, services and programs to meet this population's unique needs and to assist in their academic success in the United States.

Key Words: academic performance, international students, graduate study

The United States is one of the major host countries to international students. According to the Open Doors report (2011), 723,277 international students studied in the United States in the 2010-2011 academic year, highest number in the history. This number was 5.7% higher than the previous year. In total, 296,574 international graduate students studied in American higher educational institutions in the 2010-2011 academic year (approximately 12% of graduate enrollment in U.S. higher educational institutions). The total number of international graduate students in the 2010-2011 academic year was 24.4% higher than the 2000-2001 academic year (Open Doors, 2011). International students are responsible for bringing a multi-cultural environment to the American campus (Wood & Kia, 2000). They increase awareness and understanding of diverse cultures, values, beliefs, religions, customs, festivals, and political issues for American students. In addition to cross-cultural campus environment, international students made more than a \$20 billion economic contribution in 2009–2010 (Open Doors, 2010).

International graduate students often play important roles as teaching and research assistants. In addition to teaching courses, they provide office hours to assist students in labs and to assist students outside

of class. As research assistants, international graduate students often work hand-in-hand with faculty researchers in funded projects, patent and grant applications and in the development of publications.

Despite their ubiquity, international graduate students on American campuses have been understudied. Only a few researchers have studied international graduate students as a separate group (Trice & Yoo, 2007; Nelson, Nelson & Malone, 2004; Poyrazli, Arbona, Nora, McPherson & Pisecco, 2002). The majority of the research on international students' academic performance has focused solely on undergraduate students or it did not distinguish between undergraduate and graduate students (Abel, 2002; Light, Xu & Mossop, 1987; Selvadurai, 1998; Xu, 1991). Due to the unique admissions requirements of U.S. universities for international students, the specialized nature of graduate level study, and the critical contributions they make to the U.S. institutions, international graduate students deserve to be studied in isolation (Poyrazli et al., 2002).

International graduate students encounter many of the same common problems that American graduate students confront (Gajdzik, 2005). Many graduate students face what may be termed a "double load." Indeed, these students must deal with academic



adjustment—getting familiar with departmental and graduate norms, exploring areas of emphasis (college major) and understanding degree requirements (Weidman, Twale & Stein, 2001). They also deal with life-changing events such as changing social relationships and changing lifestyles and often learning to live within an environment functioning in a foreign language (Gajdzik, 2005). Graduate students with a teaching or research assistantship may have additional stress in preparing course materials or research projects (Polson, 2003). All of these changes and responsibilities may crucially impact their academic experiences and grades.

Pedersen (1991) pointed out that international graduate students typically face more problems and challenges than their American peers. These problems may include language barriers, insufficient academic advisement, incomplete knowledge of the educational system, teaching methods and collegial atmosphere. These added challenges may interfere with academic achievements (Pederson, 1991).

International students make significant contributions to institutions' diversity, revenue, investment, research and teaching. Research, however, has indicated that existing campus services are designed primarily for domestic students and may not appropriately serve international students (Davis, 1999). As a result, Shen and Herr (2004) suggested that educators and administrators should provide needed services for this population taking into account their geographic and cultural needs.

The current study examined factors associated with international graduate students' academic performance. Findings of the study may be of interest to practitioners in higher educational institutions with large international graduate student populations, as well as institutions that wish to attract a larger number of international graduate students.

Factors Associated with Academic Performance

A positive view of academic experience was found among international graduate students (Trice & Yoo, 2007). Research indicates that there are multiple factors associated with students' academic performance. For international graduate students, these factors included, but were not limited to, English language proficiency, learning and study strategies, academic preparation and demographics (Stoynoff, 1977; Simpson, 2001; Park, Hayes & Foster, 1994; Bilal, 1990).

Researchers found a positive relationship between language proficiency and academic achievement among international students (Stoynoff, 1997; Li, Chen & Duanmu, 2010). Dodge (1990) reported that in the first semester, international students from non-English speaking countries struggled more than those who speak English as their first language. The language skills requirement may vary by academic discipline and the college or university in which international students study (Light et al., 1987). Academic performance in the natural sciences, which requires more quantitative competencies, was less affected by English-language proficiency than academic achievement in the humanities and social sciences (Light et al., 1987). A stronger relationship was shown between academic performance and language skills for humanities/fine arts/social sciences students than for natural sciences/math/business students (Light et al., 1987).

A substantial proportion of international graduate students do not speak English as their home or first language. Although a requirement of college admission, most international students pass a standardized English proficiency examination (e.g., Test of English as a Foreign Language, also known as TOEFL). They, however, may still have difficulties in understanding lectures, expressing ideas, writing reports, taking notes, reading academic literature and understanding informal language (Angelova & Riatzantseva, 1999).

The determinants of international students' academic achievement are complex because "the vast majority of international students, even those with lower language proficiency, appear to succeed in university" (Stoynoff, 1997, p. 63). Studies reported that some factors, those that have important effects on the academic achievement of international students, were different from the abilities measured by TOEFL scores (Boyer & Sedlacek, 1988; Light et al., 1987). Abel (2002) indicated that "academic success seems to correlate modestly with attitudes toward learning and study strategies" (p. 13). In addition, Abel (2002) indicated that time management, classroom dynamics and social and educational assistance were additional factors of academic success. Stoynoff (1997) discovered that Learning and Study Strategy Inventory (LASSI) scale scores were correlated with international students' academic performance measured by their GPA. Stoynoff (1997) stated:

More academically successful students better manage their study time, were better able to prepare for and take tests, were better at

identifying the main ideas in spoken and written discourse, made better use of social support systems, and spent more time studying than less academically successful students. (p. 64)

Students entered specific academic majors in post-secondary education because they had the necessary academic preparation (Simpson, 2001). Garmoran (1987) suggested that a student's coursework track and academic achievement, as measured by standardized test scores, can be used to reflect academic preparation. In other words, the higher the coursework track and the standardized test scores, the better a student's academic preparation.

There is contradictory evidence regarding the relationship between success and gender. Scanlon (1990) found that female international students' GPA was higher than their male counterparts. Other studies, however, reported that female students had more problems than male students (Gordon & Wyant, 1994; Phongsuwan, 1996). Yet another study (Park, Hayes & Foster, 1994) reported no significant difference between female students' and male students' academic performance.

Similar to gender, there is contradictory evidence regarding age. Ganz and Ganz (1988) found that age was a significant predictor of international students' academic success and the older the student, the better the grades. On the other hand, Roongrattanakool (1998) reported that older students faced more problems than younger students, while Saisuphaluck (1997) indicated that age was not related to international students' academic success.

American students and teachers assume international students understand American classroom behaviors related to participation practices and discussion contribution (Robinson, 1992). In addition, international students may not be familiar with or feel comfortable with American style interactions with the teacher. Beishline and Holmes (1997) found the preferred American teaching styles were lectures with individual student participation or lectures with group discussion. However, these teaching methods were different than those in other countries where students were note-takers or memorizers and the teacher was seen as the sole authority (Bilal, 1990).

International students may suffer from cultural shock, homesickness, loneliness and even confusion (Pedersen, 1991). Gareis (1995) found that when a student's culture was similar to the American culture, he or she had less difficulty adapting. In contrast, students with a more dissimilar culture experienced

more problems in adapting.

House's study (2000) indicated that students' self-beliefs, achievement expectancies, and academic background were significantly correlated with students' academic performance as measured by their GPA. Culture, economic performance and competitiveness also contribute to predicting the academic success of international students (Baumann & Hamin, 2011). The perceived importance of learning success in families was significantly related to international student's academic performance (Li, Chen & Duanmu, 2010). Phongsuwan (1996) revealed that international students who spent less time in the United States experienced more academic problems than those who had stayed longer. Factors such as motivation and attitudes, previous knowledge of a field of study, previous academic performance and students' perceptions of their own success, also contribute to international students' academic success (Light et al., 1987; Nelson et al., 2004).

Research Purpose and Design

This study identifies the factors associated with international graduate students' academic performance and assists practitioners in higher education to better understand and support this group of students. The study also provides suggestions for policymakers, administrators, faculty and staff to help this population of students be academically successful in the United States.

This study was conducted at a public research university in the southeastern United States. The university enrolls approximately 50,000 students annually, including approximately 3,000 international students from more than 100 countries. Graduate students comprise approximately 18% of the total enrollment at the university; with approximately 2,100 international students in graduate programs.

This study used a researcher-developed questionnaire that was based on the literature and findings of numerous previous studies. An expert panel reviewed and commented on the survey construction, operationalization, wording format and question flow to ensure that the content of this instrument sufficiently measured international graduate students' academic performance and adjustment. A pilot test was conducted to ensure that the participants were able to complete the survey and understand the questions.

The questionnaire survey was conducted online. Three emails were sent to the international graduate student email list received from the university's Office

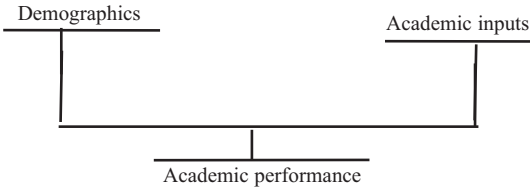


of Institutional Research. The emails included the introduction of the researchers, the purpose and instruction of the survey, confidentiality policy, estimated survey completion time, the web link to the questionnaire, and the response deadline. The instrument included an informed consent on the first page. Only those who agreed to participate were able to access the survey.

Conceptual Framework

Figure 1 provides the conceptual framework that included three constructs: demographics, academic inputs, and academic performance. The dependent construct, academic performance, is influenced by international graduate students’ demographics, and academic inputs. The construct of demographics includes age, gender, native region and native language. The construct of academic inputs consists of undergraduate GPA, length of study time, proportion of time studying alone, teaching method and learning method.

Figure 1
Researcher’s conceptual model of international graduate students’ academic performance.



Participants

All international students who enrolled in graduate programs at the site university were invited to participate in the online survey. The results included 505 responses (N=505) yielding a response rate of 33.5%. One hundred and thirty-six (27%) participants were master’s students and 369 participants (73%) were in doctoral programs. Three hundred and six (60%) participants were male. The age of the participants ranged from 21 to 46 (M = 27.9, SD = 4.17). Three hundred and fifty participants (69%) were younger than 30 years old.

The participants reported being from 72 countries, which were subsequently divided into eight regions: Africa (n = 20), Central and South America (n = 48), Central and South Asia (n = 138), East and Southeast Asia (n = 213), Europe (n = 48), Middle East (n = 29),

North America (n = 6) and Oceania (n = 3). Four hundred and sixty-nine (93%) participants self-reported that English was not their first language.

Two hundred and eighty-three (56%) participants reported spending 21 to 50 hours on study each week. Three hundred and ninety-five (78%) participants reported spending more than 50% of the time studying alone. Three hundred and thirty-three (66%) participants reported that reading was their major learning method, and four hundred and nineteen (83%) participants reported that lecture was the major teaching method used in their program. Participants reported that their undergraduate GPA score was divided into five grade units: 4.0 (n = 30), 3.7 to 3.9 (n = 200), 3.4 to 3.6 (n = 152), 3.0 to 3.3 (n = 104) and less than 3.0 (n = 19). Since most graduate programs require a minimum of a 3.0 undergraduate GPA, the GPA score categories were skewed toward higher values.

Limitations

It is important to consider the limitations of this study which limit its generalizability. The study was conducted at a single, large, public, research institution located in the southeastern portion of the U.S. Although the international graduate population came from a number of countries around the globe, the university’s reputation, size, and location may attract a unique blend of students that may differ from other similar types of universities.

Data Analysis and Results

To adjust for sampling bias, a weighting paradigm based on the country of origin was applied to the sample. The weighted data represented the international graduate student population on campus. Since the numbers of participants from the North America (Canada) and Oceania (Australia and New Zealand) regions were far lower than those from other regions and because English was their home language, data from these two regions were excluded.

A standard multiple regression analysis was performed to investigate the factors associated with international graduate students’ academic performance. The dependent variable was international graduate students’ academic performance measured by their cumulative GPA. The independent variables were gender, age, native region, native language, undergraduate GPA, proportion of time studying alone, length of study time, teaching method and learning

method. The researchers first tested for interactive effects by graduate level. Finding the interaction significant, ($t = -6.020$; $p = .001$), the data were disaggregated by graduate level and analyzed separately.

One hundred and thirty-two participants in the master's programs reported their current GPA scores. Table 1 provides the distribution of the GPA scores into five grade units. Since a minimum of a 3.0 GPA is required for graduation by the university's Graduate School policy, the GPA score categories were skewed toward high values.

Table 1

Number and Proportion of Master's Participants' GPA

	Undergraduate GPA	Master's GPA
4.0	7 (5.3%)	38 (28.8%)
3.7–3.9	56 (42.4%)	42 (31.8%)
3.4–3.6	40 (30.3%)	38 (28.8%)
3.0–3.3	25 (18.9%)	13 (9.8%)
< 3.0	4 (3.1%)	1 (.8%)

At the master's level, eight factors were significantly related with international graduate students' academic performance as measured by their current GPA. The significant influencing factors—in decreasing order of absolute values of standardized coefficients (B)—were being from Central and South Asia, length of study time, gender, age, proportion of time studying alone, being from the Middle East, undergraduate GPA and being from Africa.

Compared to East and Southeast Asian students, students from Central and South Asia and the Middle East received a lower master's level GPA, but students from Africa received a higher master's level GPA.

Table 3

Factors of Students' Academic Performance

Factor	Master		Doctoral	
	B (b)	S.E.	B (b)	S.E.
Africa	.108 (.723)	.317*	-.126 (-.453)	.100**
Europe	.003 (.012)	.190	.069 (.159)	.064*
Central and South Asia	-.178 (-.399)	.124**	-.191 (-.369)	.059**
Central and South America	.041 (.100)	.141	.169 (.423)	.078**
Middle East	-.122 (-.480)	.217*	.048 (.139)	.080
Gender	.151 (.308)	.103**	-.106 (-.153)	.041**
Age	-.146 (-.386)	.129**	-.051 (-.073)	.042
Native language	.041 (.154)	.208	.210 (.545)	.081**
Length of study time	.169 (.110)	.031**	-.102 (-.039)	.011**
Time of study alone	-.143 (-.296)	.108**	.166 (.251)	.042**
Undergraduate GPA	.115 (.122)	.051*	.146 (.102)	.020**
Teaching method	-.018 (-.048)	.129	.147 (.279)	.053**
Learning method	.089 (.183)	.109	-.086 (-.129)	0.41**

* $p < .05$. ** $p \leq .01$.

Specifically, students from the Middle East, and Central and South Asia received a .480, and .399 lower GPA unit respectively but African students received a .723 higher GPA unit than students from East and Southeast Asia with all controls considered.

Female students' master's level GPA was a .308 GPA unit higher than male students' ($b = .308$). Students who spent 10 more hours on study each week received a .110 GPA unit higher than students who did not study at the same intensity ($b = .110$). Older students received a .386 lower GPA unit than younger students who were younger than 30 years old ($b = -.386$). Students who received one unit higher in their undergraduate level GPA received a .122 unit of higher in their master's GPA ($b = .122$). Students who spent one more unit of proportion of time studying alone received a .296 GPA unit lower than students who did not study alone at the same intensity ($b = -.296$).

Three hundred and sixty-four participants enrolled in doctoral programs reported their current GPA scores. Table 2 provides the distribution of the GPA scores into five categories.

Table 2

Number and Proportion of Doctoral Participants' GPA

	Undergraduate GPA	Doctoral GPA
4.0	23 (6.3%)	105 (28.8%)
3.7–3.9	145 (39.9%)	192 (52.7%)
3.4–3.6	107 (29.4%)	60 (16.5%)
3.0–3.3	75 (20.6%)	7 (1.9%)
< 3.0	14 (3.8%)	0 (0%)

The standardized Beta (B), unstandardized beta (b), and standard error for the significant factors are reported in Table 3.



The results of the multiple regression analysis revealed an overall adjusted $R^2 = .120$; $F = 5.644$, $p = .000$ at the master's level.

At the doctoral level, the results of the multiple regression analysis revealed an overall adjusted $R^2 = .205$; $F = 23.940$, $p = .000$. At the doctoral level, eleven factors were significantly related with international graduate students' academic performance measured by their current GPA. The significant influencing factors, in decreasing order of absolute values of standardized coefficients (B), were native language, Central and South Asian descent, Central and South American descent, proportion of study time alone, teaching method, undergraduate GPA, African descent, gender, length of study time, learning method, and European descent.

Compared to East and Southeast Asian students, students from Africa and Central and South Asia received a lower doctoral GPA, but students from Europe and Central and South America received a higher doctoral GPA. Specifically, students from Europe and Central and South America received a .159 and .423 higher GPA unit, respectively, but students from Africa and Central and South Asia received .453 and .369 higher GPA unit respectively than students from East and Southeast Asia.

Female students' doctoral GPA was a .153 GPA unit lower than male students' ($b = -.153$). English speakers received a .545 higher GPA unit than non-English speakers ($b = .545$). Students who spent 10 more hours on study each week received a .039 GPA unit higher than students who did not study at the same intensity ($b = .039$). Students who spent one more unit of proportion of time studying alone received a .251 GPA unit higher than students who did not study alone at the same intensity ($b = .251$). Students who received a one unit higher undergraduate GPA received a .102 unit of higher doctoral GPA ($b = .102$). Students who experienced the lecture teaching method received a .279 GPA unit lower than students who experienced other teaching methods ($b = .279$). Students who used reading as their major learning method received a .129 GPA unit higher than students who used other learning methods ($b = -.129$).

Conclusion and Discussion

The results of multiple regression analysis revealed that students' current graduate level (master or doctoral) presents a significant factor in the prediction model of international graduate students' academic performance when measured by the cumulative grade point average

(GPA). The factors predicting masters and doctoral students' academic performance were different. These differences may be caused by the unique academic requirements and educational expectations for masters students and doctoral students. For instance, doctoral students are expected to work independently on dissertations while masters students are more likely to be socialized as team players. Arguably, students are being prepared for different types of futures leading to the somewhat obvious conclusion that encouraging academic success among international graduate students must be conceptualized dependent on level.

Of all factors, only two were consistently significant in the same direction for both masters and doctoral students. For all students, those from Central and South Asia were less likely to earn a higher GPA than the East and Southeast Asia comparison group. Similarly, all students with a higher undergraduate GPA were also more likely to earn a higher GPA at the graduate level.

In our sample, master level students from the Middle East earned a GPA that was on average lower by .122 grade points. Older master students (over the age of 30 years) on average also earned a lower GPA (by .146 grade points).

For doctoral students, we found five factors to be predictive that were not significant for the master cohort. Being from Central or South America produced a higher GPA (.169), using one's native language was more predictive of a higher grade (.210), teaching methods focused more intently on non-lecture positively affected GPA (.147), and having a learning method that was not reading produced lower GPA's (-.086).

Perhaps the most interesting findings were those that were significant for both the doctoral and masters level students but in the opposite directions. For example, gender was significant for both levels but being a female masters student predicted a higher GPA (.151). But the opposite was true for doctoral students where males, controlling for other variables would receive a higher GPA (.106). Length of study time and time studying alone were also significant but in the opposite direction. Studying longer predicted a higher GPA for masters students, while studying less was predicted for the doctoral students. Studying alone predicted a lower grade for masters students (.143) but a higher score for doctoral students (.166).

Implications

International graduate students are a unique and increasing student population at American higher

educational institutions. Despite their growing numbers, most colleges and universities have limited to no services and policies to support them (Davis, 1999). However, it is suggested that international graduate students be acknowledged and respected at universities and colleges in the United States. Based on the results of this study, universities may consider developing the following services, programs, and policies:

The university's International Center is the department that closely works with international graduate students. Several programs and services can be provided to meet international graduate students' needs at American universities. These centers have typically focused on assisting international students (both undergraduate and graduate) to adjust to American higher education. Covering such topics as immigration laws is popular. The findings of this study suggest that these centers should have orientations and sessions for graduate students. Moreover, they should consider having separate sessions for masters and doctoral students. The academic side of American university life is obviously important. Those students who had lower undergraduate GPA's are likely to need some support for the rigors of graduate study. Sessions on note-taking, study habits and time management may be helpful.

The International Center should not be expected to shoulder the entire burden of supporting international graduate students. The departments in which they enroll are probably the best equipped to assist these students in their academic adjustments. Based on our finding that masters students who spend less time in study alone are likely to earn lower grades, we suggest that departments consider including masters level students in support programs such as tutoring. In most cases, tutoring is reserved only for the undergraduate level, but it may be helpful to extend these services if possible.

Our finding that age is a negative predictor for masters students is not surprising. Just like their American counterparts, international students who are returning to academic life may need assistance in re-adjusting to being a student. Many institutions have special services reserved for older undergraduates. Again, extending these important services to the graduate level (for both American and International students) may be a welcomed opportunity for non-traditional students of all types to help ease the transition back to student life.

At first glance our finding that less time in solitary study predicts higher grades for masters students may

seem counter-intuitive, but the relationship may indicate that masters students benefit from working in a group. Similarly counter-intuitive is the relationship with using one's native language (not English) more extensively predicts higher grades for doctoral students. This finding may emphasize that international students working with others from their home countries are likely to benefit from group study and interaction. Although most universities try to integrate international students to rely less on students from their home countries and interact more with American students, it must be acknowledged that students likely find comfort and obviously benefit from others who share their cultural and language background.

In general, we want to emphasize that colleges and universities rely on international graduate students for a number of reasons. Moreover, their numbers are likely to increase. Policies to assist these students to be successful are good not only for the international students, but also for all students who work together with other good practices designed to make the institutions more efficient. Good institutional practices include providing faculty development and workshops to better enable classroom instruction to assist international graduate students' learning difficulties and needs, providing appropriate academic advisement, and adjusting teaching methods and strategies may prove to be helpful.

Good practice to assist international students includes consistently providing handouts or slides to assist comprehension, avoiding using slang or culture-related words in class, helping find study-mates or discussion groups, providing more interaction opportunities after class, creating opportunities to interact with American and other international students, and having patience and respect for those trying to adapt to a new environment.

Recommendations for Further Study

This study included one large research university. Future study may include other institutions and may compare differences by region and institutional type. Moreover, future studies should look more closely at discipline differences. Finally, future research may consider academic performance evaluation methods and how they affect graduate GPA.



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